Exhibit 731-2

HARGRAVE'S
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call tracing   80   **caller ID (CLID)**

Two categories of *call tracing* are:

- *Permanent call tracing*, which permits tracing of all calls.
- *On demand call tracing*, which permits tracing, upon request, of a specific call, provided that the called party dials a designated code immediately after the call to be traced is disconnected, i.e., before another call is received or placed.

call transfer A PABX (or other switching system) service feature that allows a user to instruct the local switching equipment (or switch attendant) to move a call's existing terminal appearance to another terminal.

call waiting A service offered by the local telephone company to subscribers wherein the subscriber is notified of an incoming call even if a connection to a remote terminal is already established. This is accomplished by sending a 1.5-second tone burst to the subscriber over the voice pair.

Obviously, this will disrupt any digital data transfers in progress. To disable the feature *for the current outgoing call*, send a special dial sequence to the central office before dialing the number of the remote terminal. On many systems this sequence is "*70" for DTMF signaling or "1170" for rotary dialing. Not all telephone systems use the same sequence; not all telephone systems even have a sequence to disable the feature; and some systems require a short pause after the sequence before proceeding with the dialed number. (This is accomplished in most communications software simply by appending a comma or two to the disable sequence.) For example, to call the number 555-1234 and disable the call waiting feature during the call the Hayes command line

ATDT *70 , 555 - 1234

would be entered. Another method gives the modem more time to determine that a link failure has occurred. This is accomplished by increasing the "hang up delay from lost carrier" from 1.4 seconds to 4 to 6 seconds. A delay value of 5 seconds is set register S10 (on Hayes compatible modems) by the command ATS10 = 50.

call waiting tone In telephony, the signaling tone generated by the local central office (CO) to a subscriber indicating that a second call is waiting for service.

callback A feature on some private branch exchange (PBX) systems that allows a caller to have the telephone system automatically establish a connection to a called, but busy, number as soon as it becomes available. When the called number becomes available, the system performs a sequence of actions such as:

- Lockout the called number (prevent it from initiating or receiving any calls).
- Ring the callback originator's (caller's) phone.
- When the caller answers the phone, ring the called parties phone and proceed as for a normal call.
- If the callback originator does not go off-hook within a timeout period, abort the process and restore the called number to normal service.

callback modem See *call back modem*.

callback queuing An optional feature on many PBX systems which allows outgoing calls to be put in a holding line (queue) awaiting the availability of an outgoing trunk. When the trunk becomes available, the call process continues. There are actually two ways the call can proceed:

- *Hold on queuing*. The call originator dials a number; the switching system has no outgoing trunks to service the call, so it notifies the caller with a tone. The caller may then elect to wait for a

trunk to clear. When a trunk becomes available, the PBX connects to the public network and proceeds as a normal call. Also called *off-hook queuing (OHQ)*.

- *Callback queuing*. The call originator dials a number; the switching system has no outgoing trunks to service the call, so it notifies the caller with a tone. The caller then dials several digits to initiate the *callback queuing* feature and hangs up. When the trunk becomes available, the system seizes the trunk and rings the call originator. Upon answering the call, the PBX connects to the public network and proceeds as a normal call. Also called *on-hook queuing*.

called line identification facility A network-provided service feature in which the network notifies a calling terminal of the address to which the call has been connected.

called line identification signal A sequence of characters transmitted to the calling terminal to permit identification of the called line.
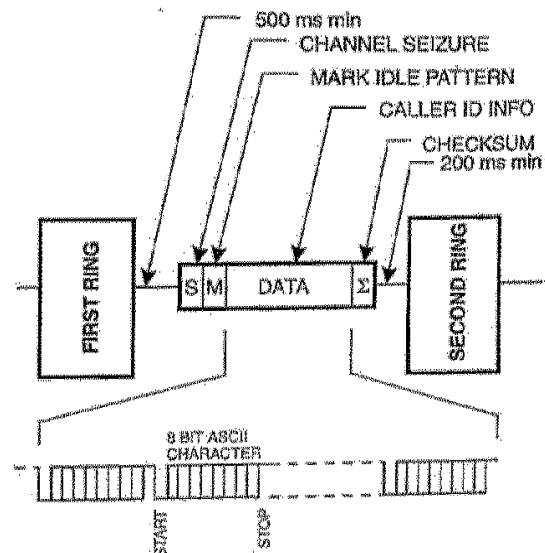
called party An entity, such as a person, equipment, or program to which a call is directed. Also called the *call receiver*.

called party camp-on A switching system service feature that enables the system to automatically complete a call attempt even if the called terminal is unavailable (e.g., the called terminal is busy) when the call attempt was initiated. To provide this feature, the system monitors the called station until the blocking signal ends; it then automatically completes the requested access. This feature permits holding an incoming call until the called party is free. Also called *camp-on* or *camp-on busy*.

called party control A term for the method of call termination where *only* the receiving station may initiate the call disconnect sequence. For example, if station A originated the connection to station B, then only station B could end the connection. Also called *line release*. See also *both party control, calling party control*, and *either party control*.

caller ID (CLID) In some telecommunications environments, a network service feature that includes the sender's identification number in the transmission so that the receiver knows who is calling.

The telephone company service allows a called subscriber device to determine what station number called before the called equipment goes off-hook. The caller's telephone number is transmitted across

the switched network between the first and second ring signal using the Bell 202 asynchronous 1200 baud FSK specification. The actual message is composed of a number of 8-bit characters with one start bit and one stop bit. The preceding diagram outlines some of the important characteristics of the *caller ID* messaging format. The data portion of the *caller ID* contains the date, time, originating caller telephone number, and possibly a company name. If the modem software supports *caller ID*, the display might look as follows:

RING
DATE = 1231
TIME = 1812
NMBR = 7045551212
NAME = NUMBERHELP
RING

Caller ID may be blocked by the calling party on either a *per call* basis or a *per line* basis. In the per call case, the caller must issue a call block command before entering the number of the remote station. The sequence to temporarily block *caller ID* transmissions is generally "*67" for DTMF signaling or "1167" for rotary dialing. When *caller ID* has been blocked on a per line basis, the calling subscriber must enable the feature on a per call basis if it is desired. The enabling command is frequently "*67" for DTMF signaling or "1167" for rotary dialing. *82 or 1182 is also used to control the caller ID mode. Also called *automatic number identification (ANI)* and *calling line identification (CLI)*.

calling device In telephony, any apparatus that generates the required signals to establish a connection between two stations on the automatic switched network.

calling line identification (CLI) A service available on digital phone networks that informs the apparatus being called which number is calling them. The central office equipment identifies the telephone number of the caller, enabling information about the caller to be sent along with the call itself.

Analogous to Automatic Number Identification (ANI) used on analog lines. See also *caller ID (CLID)*.

calling line identification facility A network-provided service feature in which the network notifies a called terminal of the address from which the call has originated. See also *caller ID (CLID)*.

calling line identification signal A sequence of characters transmitted to the called terminal to permit identification of the calling line. See also *caller ID (CLID)*.

calling party An entity, such as a person, equipment, or program that originates a call. Also called the *call originator*.

calling party camp-on A communication system service feature that enables the system to automatically complete a call attempt even if the transmission or switching facilities required to establish the requested access are temporarily unavailable. To provide this feature, the system monitors the required facilities until they become available; it then automatically completes the requested access. Systems providing called party camp-on may or may not issue a system-blocking signal to the calling party to advise of the access delay. See also *called party camp-on*.

calling party control A term that refers to the method of call termination whereby *only* the originating station may initiate the call disconnect sequence. For example, if station A originated the connec-

tion to station B, then only station A could end the connection. The release may be either immediate or after a predetermined delay, depending on the switching equipment involved. Also called *calling line release*. See also *both party control, called party control*, and *either party control*.

calling rate The *call intensity* per traffic path generally during the *busy hour*. The number of telephone calls originated during a specified time interval such as one hour.

calling sequence A sequence of instructions together with any associated data necessary to perform a call.

calling signal A call control signal transmitted over a circuit that indicates a connection is desired.

calling station identifier (CSID) The information that identifies the calling station to the receiving station. In a fax transmission, the CSID information is usually appended to the message as a header on the fax pages.

calling tone (CNG) (1) A 1300-Hz (980-Hz) tone generated by the calling DCE to inform the called DCE that a modem (computer) is originating the call. (2) A tone generated by the call-originating facsimile machine to indicate that the call is a fax transmission, not a voice transmission. The tone is 1100 Hz with a cadence of 0.5 seconds on and 3.5 seconds off.

calls-barred facility A service feature that permits a terminal either to make outgoing calls or to receive incoming calls but not both.

CALM An acronym from Connection Associated Layer Management.

CAMA An acronym from Centralized Automatic Message Accounting. In telephony, an arrangement at an intermediate office for collecting automatic message accounting information.

Cambridge Ring See *slotted ring*.

camp-on See *automatic callback, called party camp-on, calling party camp-on*, and *queue traffic*.

camp-on busy signal (1) A signal that informs a busy telephone user that another call originator is waiting for a connection. (2) A teleprinter exchange facility signal that, in response to a destination or circuits busy condition, automatically causes a calling station to retry the called number after a specified time interval. Also called *speed-up tone*.

camp-on with recall Any camp-on in which the calling party terminal is released from the switching system until the called party terminal can be seized.

The calling party can then use the terminal to originate or answer other calls until the *recall signal* is obtained. This prevents the user from the necessity of simply waiting until the called party's line is available. See also *automatic callback, called party camp-on, calling party camp-on*, and *queue traffic*.

Campus Area Network (CAN) A network that connects nodes (and possibly departmental LANs) from multiple locations, which may be separated by a considerable distance. Unlike a wide area network (WAN), however, a campus network does not require remote communications facilities such as modems and telephones.

campus wide information system (CWIS) A computer system developed to make information about a college or university easily accessible to both students and the public in general via the Internet. The information includes things such as campus event calendars,